

WHAT IS CLAIMED IS:

1. A substrate processing method, comprising the steps of:

5 spreading a first processing solution over the front surface of a substrate;
regulating the temperature of the front surface of the substrate over which the first processing solution is spread at a predetermined substrate temperature; and
10 spreading a second processing solution over the front surface of the substrate of which the temperature is regulated at the predetermined temperature.

2. The method as set forth in claim 1, further comprising the step of:

15 drying the first processing solution spread over the front surface of the substrate between said step of spreading the first solution over the front surface of the substrate and said step of spreading the second solution over the front surface of the substrate.

20 3. The method as set forth in claim 1, further comprising the step of:

previously regulating the temperature of the first processing solution at a predetermined processing solution temperature before spreading the first processing solution over the front surface of the
25 substrate.

4. The method as set forth in claim 3, wherein the predetermined processing solution

temperature is set at a temperature higher than the predetermined substrate temperature, and

wherein the front surface of the substrate is cooled in the step of regulating the temperature of the front surface of the substrate at the predetermined substrate temperature.

5 5. The method as set forth in claim 3,
 wherein the predetermined processing solution temperature is set at a temperature lower than the predetermined substrate temperature, and

10 wherein the front surface of the substrate is heated in the step of regulating the temperature of the front surface of the substrate at the predetermined substrate temperature.

15 6. The method as set forth in claim 1,
 wherein the second processing solution is a coating solution which is a raw material for a layer insulating film, and

20 wherein the first processing solution is a liquid for enhancing adhesion of the second processing solution.

7. A substrate processing method, comprising the steps of:

25 (a) spreading a first processing solution over the front surface of a substrate;

 (b) performing heat processing for the substrate over which the first processing solution is spread;

(c) regulating the temperature of the substrate subjected to the heat processing at a predetermined substrate temperature; and

5 (d) spreading a second processing solution over the front surface of the substrate of which the temperature is regulated at the predetermined temperature,

wherein said step (a), said step (b), said step (c), and said step (d) are performed continuously.

10 8. The method as set forth in claim 7, further comprising the step of:

regulating the front surface of the substrate at the predetermined substrate temperature immediately before said step (a).

15 9. The method as set forth in claim 7,

wherein the heat processing is performed for the substrate in an inert atmosphere in said step (b).

10. A substrate processing method, comprising:

20 (a) spreading a first processing solution over the front surface of a substrate;

(b) regulating the temperature of the substrate over which the first processing solution is spread at a predetermined substrate temperature; and

25 (c) spreading a second processing solution over the front surface of the substrate of which the temperature is regulated at the predetermined temperature,

wherein said step (a), said step (b), and said step (c) are performed continuously.

11. A substrate processing apparatus, comprising:

5 a first processing solution supply nozzle for supplying a first processing solution to the front surface of a substrate;

a second processing solution supply nozzle for supplying a second processing solution to the front surface of the substrate;

10 a rotary mounting table for mounting the substrate thereon and rotating the substrate; and

a temperature regulating mechanism for regulating the temperature of the front surface of the substrate at a predetermined substrate temperature.

15 12. The apparatus as set forth in claim 11,

wherein said temperature regulating mechanism includes an electro-thermo-device which is used Peltier effect.

13. The apparatus as set forth in claim 11,

20 wherein said temperature regulating mechanism includes a channel, provided in said rotary mounting table, for circulating a heat medium.

14. The apparatus as set forth in claim 11,

25 wherein said temperature regulating mechanism includes a gas supply mechanism for blowing gas with the predetermined substrate temperature against the substrate.

15. A substrate processing apparatus, comprising:

a first processing chamber including a first rotary mounting table for rotating a substrate and a first processing solution supply nozzle for supplying a first processing solution to the front surface of the substrate mounted on and rotated by the first rotary mounting table;

a second processing chamber including a second rotary mounting table for rotating the substrate and a second processing solution supply nozzle for supplying a second processing solution to the front surface of the substrate mounted on and rotated by the second rotary mounting table;

a first temperature regulating chamber for previously regulating the temperature of the front surface of the substrate to be transferred to said first processing chamber at a predetermined substrate temperature;

a second temperature regulating chamber for previously regulating the temperature of the front surface of the substrate to be transferred to said second processing chamber at a predetermined substrate temperature;

a heat processing chamber for previously performing heat processing for the substrate to be transferred to said second temperature regulating chamber; and

a substrate transfer device for transferring the substrate at least between said first processing chamber, said second processing chamber, said first temperature regulating chamber, said second temperature regulating chamber, and said heat processing chamber.

16. The apparatus as set forth in claim 15,

wherein said first temperature regulating chamber is disposed below said heat processing chamber, and

wherein said second temperature regulating chamber is disposed below said first temperature regulating chamber.